V. Departmentwide Profile of Information Technology Resources

The Department's bureaus and offices now have **90** mission critical systems - including financial, regulatory/legal, and health and safety applications - with nearly 18 million lines of code that operate in a mixed platform environment (see chart below). Today, almost 80% of these mission critical systems reside on a mainframe or minicomputer platform with a multitude of personal computers linked to them for access by users. Since many of the most important legacy systems will continue to reside on one of these two platform types, provisions must be made now to make this hardware Y2K compliant. The Department's strategy for these platforms was to repair or replace them during the past year and conclude any needed testing, including IV&V, during the first two quarters of FY 1999 so they will remain useable and able to support the existing mission critical or future systems in 2000 and beyond.

In terms of PC replacement, it is difficult to ascribe a cost that is solely associated with Y2K amelioration efforts and not normal life cycle replacement. Of the Department's more than 55,000 PCs up to 60% will have been repaired or replaced by December 1999, primarily to achieve greater functionality with the collateral benefit of achieving Y2K compliance.

DOI Mission Critical Systems By Platform - February 1997

Mission Critical	Total Lines of Code	Percent of systems on each platform		
		Mainframes	Minicomputers	PCs, Workstations, and Servers
90	18,000,000	51%	28%	21%

Prior to the year 2000, however, the Department's overall "application by platform type" composition will change as illustrated below. For instance, the number of mainframes in use has declined due to the data center consolidation effort currently underway. And, even though the number of minicomputers may stay constant during this period, they will increasingly function as large servers along with Reduced Instruction Set Computing (RISC) or Intel-based workstations and servers as more and more applications are ported to these platforms. Also, the number of systems noted as mission critical will also decrease due to several of them being replaced by March of 1999. The Department estimates that the current cost of making these mission critical systems Y2K compliant will total over $35 million between FYs 1997 - 1999. Initial cost estimates were keyed to the industry average of $1.10 per line of code. The current industry average is now between $1.30 and $1.70 per line of code.

DOI Mission Critical Systems By Platform - March 1999

Mission Critical	Systems Retired	Total Lines of Code	Percent of systems on each platform		
			Mainframe	Minicomputers	PCs, Workstations, and Servers
90	0	18,000,000	31%	27%	42%

Each of the bureaus and offices are directing their efforts in making applications, systems, and hardware Y2K compliant in a variety of ways. The following is a brief overview describing their existing IT resources and methods to be used in making their infrastructure Y2K compliant.

Office of the Secretary

The Office of the Secretary (O/S) consists of several offices, including the Office of Inspector General, the Solicitor's Office, the Office of Information Resources Management, Office of Personnel, Office of Environmental Policy & Compliance, Congressional and Legislative Affairs, and several other administrative support offices. These offices provide program and administrative support for all of the bureaus in DOI. There are approximately 1500 staff. The employees use IBM compatible microcomputers operating on Windows 3.1 or Windows 95. Several minicomputers are used to process administrative functions within the Office of the Secretary. The offices are supported by Local Area networks (LANS) linked through various e-mail systems connected to the Department's wide area network (DOINET). DOINET serves as the common network infrastructure for the Office of the Secretary and each bureau.

Bureau of Land Management

The Bureau of Land Management (BLM) consists of 12 Regional Offices, 5 Service Centers, a Headquarters office and approximately 240 site field offices. It employs 10,000 people in 254 offices. BLM is responsible for over 265 million acres of public land and over 500 million acres of Federally-owned mineral interests. As part of its effort to modernize its land information system, the BLM is developing an Automated Land & Mineral Records System (ALMRS), which will run on the Unix Operating System. This system will allow BLM to retire its mainframe and minicomputers in favor of a total client/server platform. Over half of the 10,000 BLM employees use Unix workstations that are already Y2K compliant. Efforts are now underway to standardize the remaining 4100 desktop computers so that they will be on a standard network configuration with the goal of having the entire bureau on one or, at most, two networks by the end of FY 1998.

Bureau of Reclamation/Denver Administrative Service Center

The Bureau of Reclamation (BOR) consists of 5 Regional Offices, the Reclamation Service Center (RSC) which includes the Technical Service Center (TSC), a Washington office, an Area

office in each of the seventeen western states, Operations offices at each major Dam site, three construction offices, and Power offices at each Hydro-Electric power site. There are currently approximately 5400 staff. Reclamation has been migrating to a client/server technology over the past few years, eliminating mainframe technology. Nearly all Reclamation employees work through PCs attached to LANs, with some using workstations tied to CAD or GIS systems. These PCs are generally running Windows 3.1, or Windows 95, and some NT workstations. Older hardware and associated operating systems will be phased out over the next three years. Reclamation has an extensive data communication network connecting PCs, servers, printers, and other resources. Reclamation will examine this network and replace or repair any which are not Y2K compliant.

Administratively located within the Bureau of Reclamation, the Denver Administrative Service Center (DASC) provides automated administrative and data center processing services. The DASC data center is located in Lakewood, CO., and employs 450 Federal and 100 contract employees who use PCs to access an IBM mainframe. The DASC is responsible for Departmentwide administrative systems such as, the Federal Personnel and Payroll System (FPPS). These systems serve a wide variety of customers inside and outside the Department and operate in an interactive/online and batch processing mode. Each system allows for significant remote data entry and management and retrieval by users. In addition, the FPPS system comprises more than 100,000 accounts for the Department and other Federal agencies.

Minerals Management Service

The Minerals Management Service (MMS) consists of 4 Regional Offices, several royalty compliance offices, and headquarters offices located in Herndon, Virginia and Washington D.C. The Service employs just over 1,700 people. The MMS was established in 1982 and today is responsible for all Outer Continental shelf (OCS) oil, gas, and mineral leasing. The MMS is a leading contributor of income to the U.S. Treasury. Since 1982, the MMS royalty management function has collected and disbursed more than $55 billion in bonuses, rents, and royalties from companies that lease and produce minerals from federal lands (both onshore and offshore) as well as Indian lands.

MMS staff have access to client/server-based Pentium-class microcomputers, desktop software suites which are Y2K compliant. The Royalty Management Program maintains a Hitachi EX-90 mainframe that houses information on collection and disbursement activities. Staff in the Service's Offshore community utilize high-end Unix workstations and servers to analyze complex seismic and geologic information when calculating fair market value for offshore tracts of federal land. And, administrative staff use a minicomputer to provide financial and budget information to senior managers and other key staff.

For the most part, the Service's installed base of hardware platforms - over 2,000 microcomputers, a mainframe, and a minicomputer - are already Y2K compliant. Those that are not will be retrofitted for compliance well before March of 1999. The Hitachi EX-90 mainframe will be retired as part of the Department's data center consolidation effort.

Two of MMS's most important applications are also included in the CIO's IT investment portfolio. The Technical Information Management System is almost entirely Y2K compliant now by virtue of the Oracle products being used to develop it. The other CIO application, Royalty Management Accounting Systems, is undergoing renovation by the onsite contractor, American Management Systems. Also being examined are embedded systems technology - routers, hubs, elevators, telephone systems, and other embedded chip technologies to ensure they are Y2K compliant. The MMS has already requested compliance notification from several key software vendors - Microsoft, Novell/Corel, Oracle - and major hardware vendors, such as Dell Computers to obtain the necessary compliant upgrades as they become available.

U.S. Geological Survey/Washington Administrative Service Center

The U.S. Geological Survey (USGS) consists of 4 divisions, 7 Regional Center, 3 Mapping Centers, and over 200 field offices geographically distributed throughout the United States. This decentralization requires a vast communication infrastructure. Nearly one half of the desktop technology is standard Intel-based hardware using a variety of software products. The remaining one half are Unix workstations with a similarly diverse complement of software. A few employees use Macintosh desktop computers. The USGS also has an IBM mainframe running MVS and Unix. USGS has issued policy requiring that all hardware and firmware must be compliant by July 1, 1998. Any hardware or devices must be compatible with date and time functions on the network by July 1, 1998 and must be compliant by July 1, 1999.

Administratively located with the U.S. Geological Survey, the Washington Administrative Service Center (WASC) is a franchising provider of automated administrative and information technology services. The WASC employs 70 employees that administer and monitor the Federal Finance System (FFS) and the Interior Department Electronic Acquisition System (IDEAS).

Office of Surface Mining

The Office of Surface Mining (OSM) primarily functions in a microcomputer environment. A total of 808 hardware systems are used within the bureau, of which 712 are already Y2K compliant. Of the remaining systems, 54% will be made compliant in 1997, 25% in 1998, and 21% by fiscal year 1999. Of the non-compliant hardware within the bureau, 44 microcomputers are projected to be upgraded or replaced in FY 1997; 22 in FY 1998, and the remainder in FY 1999. A total of 98 portable computers were reported in OSM, of which 20 are non-compliant and will be replaced or retrofitted in the next two FYs. And, the LAN servers reported noncompliant will be replaced or repaired within the next two FYS as well. The bureau is also reviewing several products for upgrading its microcomputer BIOS's to make them Y2K compliant. Sixteen mission critical non-compliant systems have been identified by the OSM and all of them will be repaired no later than FY 1999.

Fish and Wildlife Service

The Fish and Wildlife Service (FWS) consists of 7 Regional Offices, a Headquarters Office (with some functions in Denver, Boise, Shepherdstown, West Virginia, and St. Petersburg, Florida), and approximately 500 field offices. It employs roughly 8,000 people and has primary

responsibility for nearly 100 million acres of wildlife refuges.

Use of personal computers is common throughout the Service. Most offices have some 486- or Pentium-class machines, but a large number of older machines are still in use. Nearly every office is connected through the Service Wide Area Network (SWAN) to Departmental Administrative Systems and the Internet, and FWS-Mail provides reliable e-mail to these offices. The largest offices have fast connectivity through the SWAN backbone, while all others rely upon dialup connections.

The FWS relies upon Departmental Administrative Systems, and has developed few other applications that will be affected by Y2K issues. The major legacy system, Law Enforcement Management Information System (LEMIS), will be totally reengineered within the next 18 months and will be Y2K compliant. Other systems are typically small database applications that have been or will be modified over the next several months to be Y2K compliant.

Within the bureau's hardware inventory, there are several older generation microcomputers (80286/80386 vintage) as well as some minicomputers which cannot be modified to become Y2K compliant. These systems will need to be replaced by FY 1999.

Bureau of Indian Affairs

The Bureau of Indian Affairs (BIA) consists of 12 Area Offices, 86 Agency Offices, a Central Office (East) and Central Office (West) Headquarters office and approximately 200 Education (Schools) sites. The BIA employs 11,000 people in 298 offices. BIA is responsible for providing resources and services to over 1.3 million Native Americans in a variety of ways. A major service is the tracking of Federally-owned mineral interests and collecting and distributing the monies to the rightful owners. Of 12 Bureauwide systems, the BIA is in the process of redesigning or reengineering 11 systems as part of its modernization (IRMS/Modernization) project. IRMS/Modernization is scheduled for deployment Bureauwide during FY 1998. Over 25% (4) of these systems are Y2K compliant as of May, 1997, and 75% (10) will need to be repaired or replaced prior to Fiscal Year 1999. Repairs are now underway and are expected to be completed in FY98. This modernization effort includes retiring one of the two existing mainframes that currently house these financial applications.

This BIA design and deployment project should take care of most of its major Y2K software problems. An additional number of bureauwide systems, have been identified and will be repaired or retired prior to 2000. In many cases, these bureauwide systems will be replaced by more modern systems. Therefore, BIA's strategy emphasizes bringing new compliant systems on line rather than repair existing systems. Program and Field offices will be responsible for ensuring hardware and peripherals are compliant as part of BIA's Modernization effort. BIA is already negotiating with its contractors and with vendors on ensuring that network equipment is compliant. Facilities compliance will be undertaken in conjunction with the Department's efforts and those of GSA, who manages the majority of BIA buildings.

Over half of the 11,000 BIA employees use older PCs that were installed between 1985-1996 for the purpose of accessing the IRMS database. These older workstations are not Y2K compliant now but efforts are underway to retrofit or replace them. These efforts will also standardize all the remaining desktop computers so that they will be on a standard network configuration bureauwide with the goal of having the entire bureau on one or two (at most) networks by the end of FY 1998. BIA is also issuing instructions to its IRM servicing offices to check personal computers, routers, hubs, and peripherals to ensure they are Y2K compliant. The BIA is already negotiating with Novell to obtain the necessary compliant upgrades as they become available.

National Park Service

The National Park Service (NPS) consists of seven regional offices, Headquarter offices, and 374 parks, and monument locations. It employs approximately 20,000 people and uses the service of almost 85,000 citizen volunteers. As part of its effort to modernize its information systems, the NPS has developed a plan called Information Management 2000 and a budget to upgrade PCs and LANs at the many park locations. NPS will be linked by means of a nationwide client/server architecture, using DOINET as a wide area network backbone and Novell, Microsoft NT and Windows 95 at the national park level.

In light of the efforts to modernize its computer systems, NPS is expecting the deployment schedule to take care of most of its major Y2K software problems. NPS strategy emphasizes bringing new compliant systems on line rather than repairing existing systems. Regional offices will be responsible for ensuring local systems are complaint. Facilities compliance will be undertaken in conjunction with the Department's efforts and those of GSA.

At the present time, the NPS has over 5,000 386 and older PCs. However, in 1998 and 1999, current budget plans call for the complete replacement of these old systems. This effort to standardize these 5000 desktop computers so that they will be on a standard network configuration Bureauwide with the goal of having the entire Bureau on one or two types of networks (NT and Novell) by the end of FY 1999. The FY 1999 NPS budget request included a program increase for $760,000 for 1999 Y2K software, and is estimated an additional $4.8M for infrastructure and firmware upgrades for out of warranty equipment such as telephone systems and medical equipment. The NPS will also issue instructions to its IRM servicing offices to check personal computers, routers, hubs, and peripherals to ensure they are Y2K compliant.

Hardware

The following depicts a Departmentwide perspective (by each bureau/office) of its hardware inventory - from mainframes to notebooks - that must be made Y2K compliant.

Department of the Interior Hardware				
Bureau/Office	**Mainframes**	**Minicomputers**	**PCs (Including Notebooks and Servers)**	**UNIX Workstations**
BIA	1	1	10,000	50
BLM	1	14	4,337	6,000
BOR/DASC	1	164	6,743	142
FWS	0	0	7,500	40
MMS	1	1	2,626	100
NPS	0	4	14,000	500
OS	0	7	1,649	30
OSM	0	5	716	82
USGS/WASC	1	19	7,588	4,000
TOTAL	5	215	55,159	10,944

The following chart shows the timetable for replacing or repairing this hardware prior to the new millennium. Anticipated costs for replacing personal computers reflect not only the requirement to make this hardware Y2K compliant, but also includes the normal replacement costs that should occur anyway as equipment reaches the end of its useful life cycle.

DEPARTMENT OF THE INTERIOR Hardware Repair/Replacement Y2K Compliance Schedule					
Platform	**Number**	**Percent Already Y2K Compliant**	**Percent To Be Repaired, Retired or Replaced In FY 1997**	**Percent To Be Repaired, Retired or Replaced In FY 1998**	**Percent To Be Repaired, Retired or Replaced In FY 1999**
Mainframes	5	57%	0%	43%	0%
Minicomputers	217	20%	20%	40%	20%
Microcomputers (including Notebooks and Servers)	55,159	40%	10%	25%	25%
UNIX Workstations	10,944	90%	5%	5%	0%